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- (74) Agents: SMITH, DeAnn, F. et al.; Lahive & Cockfield, LLP, 28 State Street, Boston, MA 02109 (US).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).



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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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(54) Title: GENES DIFFERENTIALLY EXPRESSED IN HUMAN PROSTATE CANCER AND THEIR USE

(57) Abstract: The invention relates to compositions, kits, and methods for detecting, characterizing, preventing, and treating human prostate cancers. A variety of novel markers are provided, wherein changes in the levels of expression of one or more of the markers is correlated with the presence of prostate cancer.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/05171

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|--|-----------|-----------|-----------|----------|------------|
| A. CLASSIFICATION OF SUBJECT MATTER | | | | | |
| IPC 7 | C07K14/47 | C07K16/18 | A61K38/17 | C12Q1/68 | C07K14/705 |
| G01N33/50 | | | | | |

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

BIOSIS, EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------|
| X | <p>DATABASE EM_HUM [Online] EMBL; 99% identity in 131 nt overlap (nt 17469-17781), 21 December 1999 (1999-12-21) WATERSTON, R.H.: "Human chromosome 2 clone RP11-555N21" retrieved from EBI, accession no. AC018693 Database accession no. AC=18693 XP002182514 abstract</p> <p>---</p> <p>-/-</p> | 1-4 |

 Further documents are listed in the continuation of box C. Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

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11.3.02

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/05171

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|----------|---|-----------------------|
| A | <p>YANG MEIHENG ET AL: "Cloning differentially expressed genes by linker capture subtraction." ANALYTICAL BIOCHEMISTRY, vol. 237, no. 1, 1996, pages 109-114, XP002182513 ISSN: 0003-2697 abstract page 109, column 2, last paragraph -page 112, column 1, paragraph F</p> <p>---</p> | 1 |
| A | <p>VAARALA MARKKU H ET AL: "Several genes encoding ribosomal proteins are over-expressed in prostate-cancer cell lines: Confirmation of L7a and L37 over-expression in prostate-cancer tissue samples." INTERNATIONAL JOURNAL OF CANCER, vol. 78, no. 1, 1998, pages 27-32, XP000926518 ISSN: 0020-7136 abstract and results section</p> <p>---</p> | 1 |
| A | <p>BLOK L J ET AL: "ISOLATION OF DNAs THAT ARE DIFFERENTIALLY EXPRESSED BETWEEN ANDROGEN-DEPENDENT AND ANDROGEN-INDEPENDENT PROSTATE CARCINOMA CELLS USING DIFFERENTIAL DISPLAY PCR" PROSTATE, US, WILEY-LISS, NEW YORK, NY, vol. 26, no. 4, 1 April 1995 (1995-04-01), pages 213-224, XP000611577 ISSN: 0270-4137 abstract</p> <p>---</p> | 1 |
| A | <p>WO 00 04149 A (CORIXA CORP) 27 January 2000 (2000-01-27) abstract page 48, line 1 -page 59, line 22 page 60, line 3 -page 62, line 10 page 68, line 5 -page 76, line 7</p> <p>-----</p> | 1 |

INTERNATIONAL SEARCH REPORT

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:

Although claims 45 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. Claims Nos.: 8, 13, 45-48, 51, 53-56 because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

see FURTHER INFORMATION sheet PCT/ISA/210
3. Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-66 partly

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
 No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: Invention 1: Claims 1-66 partly

An isolated nucleic acid molecule comprising the nucleotide sequence shown in SEQ.ID.No. 1 of Table 1; a vector and host comprising said nucleic acid; an isolated peptide encoded by said nucleic acid; an antibody which binds to said polypeptide; a method for producing said polypeptide; a method for detecting said polypeptide or said nucleic acid and their use in the diagnosis and treatment of prostate cancer and for the screening of compounds which inhibit prostate cancer.

2. Claims: Inventions 2-22548: Claims 1-66 partly

Idem invention 1, but for SEQ.ID.No. 2 to 22548 respectively, as set forth in Tables 1, 5, 8 and 9, wherein each sequence represents an individual invention, i.e. invention 2 relates to SEQ.ID.No.2, through to invention 22548 representing SEQ.ID.No.22548

3. Claims: Inventions 22549-25868: Claims 1-66 partly

Idem invention 1, but for SEQ.ID.No. 1 to 3323 respectively, as set forth in Table 2, wherein each sequence represents an individual invention, i.e. invention 22549 relates to SEQ.ID.No.1 of Table 2, through to invention 25868 representing SEQ.ID.No.3323 of Table 2.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 8, 13, 45-48, 51, 53-56

Present claims 8, 13, 46, 47, 51 and 53 relate to a compound defined by reference to a desirable characteristic or property, namely by its ability to bind to a polypeptide respectively a nucleic acid encoding said protein.

The claims cover all compounds having this characteristic or property, whereas the application provides support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT for NONE of such compounds. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Independent of the above reasoning, the claims also lack clarity (Article 6 PCT). An attempt is made to define the compound by reference to a result to be achieved. Again, this lack of clarity in the present case is such as to render a meaningful search over the whole of the claimed scope impossible. Consequently, NO search has been carried out for those claims.

Present claims 45, 54 and 56 relate to (the use of) a test composition/compounds defined by reference to a desirable characteristic or property, namely by its ability to alter the level of expression of a marker gene for prostate cancer.

The claims cover all test compositions/compounds having this characteristic or property, whereas the application provides support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT for NONE of such testcompositions/compounds. In the present case, the claims so lack support, and the application so lacks disclosure; that a meaningful search over the whole of the claimed scope is impossible. Independent of the above reasoning, the claims also lack clarity (Article 6 PCT). An attempt is made to define the test composition/compound by reference to a result to be achieved. Again, this lack of clarity in the present case is such as to render a meaningful search over the whole of the claimed scope impossible. Consequently, NO search has been carried out for those claims.

Present claims 48 and 55 relate to (the use of) a compound defined by reference to a desirable characteristic or property, namely by its putative ability to inhibit prostate cancer.

The claims cover all compounds having this characteristic or property, whereas the application provides support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT for NONE of such compounds. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Independent of the above reasoning, the claims also lack clarity (Article 6 PCT). An attempt is made to define the compound by reference to a result to be achieved. Again, this lack of clarity in the present case is such as to render a meaningful search over the whole of the claimed scope impossible. Consequently, NO search has been carried out for those claims.

The applicant's attention is drawn to the fact that claims, or parts of

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

INTERNATIONAL SEARCH REPORT

Information on patent family members

National Application No

PCT/US 01/05171

| Patent document cited in search report | Publication date | Patent family member(s) | | Publication date |
|--|------------------|-------------------------|----|------------------|
| WO 0004149 | A 27-01-2000 | AU 5314899 | A | 07-02-2000 |
| | | BR 9912007 | A | 29-01-2002 |
| | | CN 1315998 | T | 03-10-2001 |
| | | EP 1097208 | A2 | 09-05-2001 |
| | | NO 20010196 | A | 12-03-2001 |
| | | WO 0004149 | A2 | 27-01-2000 |
| | | US 6329505 | B1 | 11-12-2001 |
| | | US 2002022248 | A1 | 21-02-2002 |